APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,021	09/08/2006	Jay H. Stoffer	187142/US/2	1324

25763   7590   01/07/2009
DORSEY & WHITNEY LLP
INTELLECTUAL PROPERTY DEPARTMENT
SUITE 1500
50 SOUTH SIXTH STREET
MINNEAPOLIS, MN 55402-1498

EXAMINER
DRENNAN, BARRY T

ART UNIT	PAPER NUMBER
4133	

MAIL DATE	DELIVERY MODE
01/07/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/12/2006*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Priority

1.   This application claims benefit as a national stage application of

PCT/US04/10987, filed under the Patent Cooperation Treaty on 9 April 2004. This

application also claims benefit of United States Provisional Application 60/461,821, filed

on 11 April 2003.

Specification

2.   The disclosure is objected to because it contains an embedded hyperlink and/or

other form of browser-executable code in paragraph 29 on page 9. Applicant is

required to delete the embedded hyperlink and/or other form of browser-executable

code. See MPEP § 608.01.

3.   The incorporation of essential material in the specification by reference to an

unpublished U.S. application, foreign application or patent, or to a publication is

improper. Applicant is required to amend the disclosure to include the material

incorporated by reference in paragraph 29 on page 9, if the material is relied upon to

overcome any objection, rejection, or other requirement imposed by the Office. The

amendment must be accompanied by a statement executed by the applicant, or a

practitioner representing the applicant, stating that the material being inserted is the

material previously incorporated by reference and that the amendment contains no new

matter. See 37 CFR 1.57(f).

4.   The attempt to incorporate subject matter into this application by reference to a

hyperlink in paragraph 29 on page 9 is ineffective because hyperlinks are not a proper

form of incorporation by reference per 37 CFR 1.57(d).

5.   The title of the invention is not descriptive. A new title is required that is clearly

indicative of the invention to which the claims are directed.

The following title is suggested: "Differential interframe image compression with

coring-based noise reduction."

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

1.   Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed invention is

drawn to non-statutory subject matter. While the claims recite a series of steps to be

performed, a statutory process under 35 U.S.C. 101 must (1) be tied to another

statutory category (such as a particular apparatus), or (2) transform underlying subject

matter (such as an article or a material) to a different state or thing.

The instant claims neither transform underlying subject matter nor positively tie to

another statutory category that accomplishes the claimed method steps, and therefore

do not qualify as a statutory process. In order for a process to be tied to another

statutory category, the structure of another statutory category must be positively recited

in a step or steps significant to the basic inventive concept, and not just in association

with statements of intended use or purpose, insignificant pre- or post-solution activity, or

implicitly.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3.   Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. The last limitation in claim 1, "compressing said images of

said series 1 to n using a compression algorithm to form compressed images," is not

specific in terms of which image series – the original images, the subtracted images, or

some combination of the two – is to be compressed.

        For purposes of examination against prior art, Examiner interprets the claim to

mean that the images to be compressed comprise the subtracted images, because

support for this interpretation is found in Applicant's written description at paragraph 35

on page 11.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Thompson, J.E., U.S. Patent 3,921,204 (issued 18 November 1975, hereinafter

Thompson), and further in view of Girod, B., et al., "A subjective evalutation of noise-

shaping quantization for adaptive intra-/interframe DPCM coding of color television

signals," IEEE Transactions on Communications, vol. 36 issue 3, pp. 332-346

(published March 1988, hereinafter Girod).

6.   With respect to claim 1, Thompson discloses:

subtracting the value of each pixel of the ordered image a corresponding pixel to

form subtracted images (Fig. 1 #2);

adjusting pixel values to zero when the subtracted image pixel value is below a

threshold (Fig. 1 #3 and Fig. 2); and

compressing the image series [comprising the subtracted images] using a

compression algorithm to form compressed images (Fig. 1 #4).

Thompson does not disclose arranging the images in order or having the

subtraction take place between a pixel and the corresponding pixel in an adjacent

image (i.e., interframe coding versus Thompson's intraframe coding).

However, Girod discloses a similar system (Fig. 1) including interframe coding

(Fig. 2a).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to implement the image compression system of Thompson

by replacing the intraframe sampling with the interframe sampling of Girod, motivated by

the fact that this system will prove beneficial "[i]n regions of the picture where the signal

contains only small changes from frame to frame" (Girod p. 332 col. 2, fifth full paragraph).

7.   With respect to claim 2, Thompson further discloses decompressing the images compressed according to the technique of Thompson and Girod, above, by reconstructing the decompressed images (Fig. 1 #8) and re-adding the subtracted pixel values to the previous sample (Fig. 1 #9, #11) to arrive at the original images modulo the lossy operations (e.g., thresholding, lossy compression) earlier performed.

8.   With respect to claim 3, Thompson further discloses that the adjacent images are reconstructed images (reconstruction occurs at Fig. 1 #5, and those images are then subtracted at Fig. 1 #2).

9.   With respect to claim 6, Thompson and Girod disclose the limitations of parent claim 1, but Thompson does not disclose the images being aligned.

However, Girod implicitly discloses the alignment of the images because this is an integral part of an interframe coding technique, as suggested in Fig. 2.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image compression system of Thompson and Girod by replacing the intraframe sampling with the interframe sampling of Girod, which requires the alignment of the images, motivated by the fact that this system will

prove beneficial "[i]n regions of the picture where the signal contains only small changes from frame to frame" (Girod p. 332 col. 2, fifth full paragraph).

10.   Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson and Girod as applied to claim 1 above, and further in view of Kwon, H., U.S. Patent 4,745,465 (issued 17 May 1988, hereinafter Kwon).

11.   With respect to claim 4, Thompson and Girod disclose the limitations of parent claim 1, including the threshold zeroing of Thompson. Thompson and Girod do not disclose adjusting the threshold such that the threshold value is less than a noise tolerance threshold for the subtracted pixels.

However, Kwon discloses selecting a threshold such that "most of the noisy uniform area and fine textured area are rejected" (col. 7 lines 19-21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the threshold zeroing subtractive compressor of Thompson and Girod with the noise-detecting threshold adjustment of Kwon, because doing so would ensure that regions containing noise would be rejected while regions containing scene content would be maintained (Kwon, col. 7 lines 22-26).

12.   With respect to claim 5, Thompson, Girod, and Kwon disclose the limitations of parent claim 4. Thompson and Girod do not disclose setting the threshold to the maximum value in which a normal distribution test is passed.

However, Kwon discloses using a chi-squared test to determine whether the

signal has a Gaussian (i.e., normal) distribution and setting the threshold accordingly

(col. 7 lines 15-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to combine the threshold zeroing subtractive compressor

of Thompson and Girod with the chi-squared test noise-detecting threshold adjustment

of Kwon, because doing so would ensure that regions containing noise would be

rejected while regions containing scene content would be maintained (Kwon, col. 7 lines

22-26).

13.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Thompson and Girod as applied to claim 1 above, and further in view of Ransford et al.,

U.S. Patent 5,490,221 (issued 6 February 1996, hereinafter Ransford).

14.   With respect to claim 7, Thompson and Girod disclose the limitations of parent

claim 1, but do not disclose the application of a noise reduction filter to any of the

images.

However, Ransford discloses a differential compression method that also applies

a noise filter to the images (Fig. 2 #55).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to combine the differential interframe image compression

technique of Thompson and Girod with the region smoothing filter of Ransford,

motivated by the ability to reduce noise in the differential images (Ransford, col. 13 lines

49-53), particularly in areas missed by the thresholding filter, as well as the need to

apply some sort of filtering to the initial image which is not noise-filtered by the

thresholding process.

15.   Claims 8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Thompson and Girod as applied to claim 1 above, and further in view of Cohen,

M.S., "A data compression method for image time series," Human Brain Mapping, vol.

12 issue 1, pp. 20-24 (published January 2001, hereinafter Cohen).

16.   With respect to claim 8, Thompson and Girod disclose the limitations of parent

claim 1, but do not disclose storage of the images.

However, Cohen discloses a differential image compression technique as well as

the transfer of said images via FTP (section III, second paragraph), thus inherently

storing the images both at the source and destination location. The storage format

inherent to Cohen is the disk storage format utilized by the computers used by Cohen.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to store, as disclosed by Cohen, the images encoded by

the technique of Thompson and Girod, motivated by the well-known need to access

images at a different time than when they were produced, compressed, etc.

17.   With respect to claim 10, Thompson, Girod, and Cohen disclose the limitations of

parent claim 8, but neither Thompson nor Girod disclose storage of the images.

However, Cohen implicitly discloses storage in RAM, cache, a fixed disk, and/or

a magnetic disk as part of using FTP to transfer the images (section III, second

paragraph) in conjunction with the computer systems described in section II.C.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to store, as disclosed by Cohen, the images encoded by

the technique of Thompson and Girod, motivated by the well-known need to access

images at a different time than when they were produced, compressed, etc.

18.   With respect to claims 11-13, Thompson and Girod disclose the limitations of

parent claim 1, and both disclose the transmission of the compressed images. Neither

explicitly discloses encoding in a transmission format and transmitting through a

particular medium.

However, Cohen discloses transferring the compressed images via FTP, where

the transmission format is TCP/IP and the transmission mechanism is a network (likely

the Internet) (section III, second paragraph).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to transmit, as disclosed by Cohen, the images encoded

by the technique of Thompson and Girod, motivated by the well-known need to access

images at a different place than where they were produced, compressed, etc.

19.   Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Thompson, Girod, and Cohen as applied to claim 8 above, and further in view of

Boutell, T., et al., "PNG (Portable Network Graphics) Specification Version 1.0," RFC

2083 (published March 1997, hereinafter RFC 2083).

20.   With respect to claim 9, Thompson, Girod, and Cohen disclose the limitations of

parent claim 8, but none discloses encoding the image in the PNG format.

        However, RFC 2083 discloses the PNG format as an image format providing

lossless image compression.

        Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to store the differential images produced by the technique

of Thompson, Girod, and Cohen, in the PNG format disclosed in RFC 2083, motivated

by the features provided by PNG ("PNG is robust, providing both full file integrity

checking and simple detection of common transmission errors," or "Sample depths

range from 1 to 16 bits," RFC 2083, page 1).

21.   Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Thompson, and further in view of Girod and Cohen.

22.   With respect to claim 14, Thompson discloses:

        subtracting the value of each pixel of the ordered image a corresponding pixel to

form subtracted images (Fig. 1 #2);

        adjusting pixel values to zero when the subtracted image pixel value is below a

threshold (Fig. 1 #3 and Fig. 2); and

        compressing the image series [comprising the subtracted images] using a

compression algorithm to form compressed images (Fig. 1 #4).

Thompson does not disclose arranging the images in order or having the subtraction take place between a pixel and the corresponding pixel in an adjacent image (i.e., interframe coding versus Thompson's intraframe coding).

However, Girod discloses a similar system (Fig. 1) including interframe coding (Fig. 2a). Furthermore, Cohen discloses implementing a similar system (Sec. II.A.) on a computer (Sec. II.C.) which inherently includes a processor and memory.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image compression system of Thompson by replacing the intraframe sampling with the interframe sampling of Girod, motivated by the fact that this system will prove beneficial "[i]n regions of the picture where the signal contains only small changes from frame to frame" (Girod p. 332 col. 2, fifth full paragraph), and implementing the technique on a computer such as that disclosed by Cohen, motivated by the well-known usefulness of implementing computationally-intensive techniques on a computer.

23.   With respect to claim 15, Thompson discloses reconstructing the compressed images using an associated decompression algorithm (Fig. 1 #8) and adding the differential image pixels to the adjacent image (Fig. 1 #9, #11) to arrive at the original images modulo the lossy operations (e.g., thresholding, lossy compression) earlier performed.

Thompson does not disclose decompressing images that were compressed by arranging the images in order or having the subtraction take place between a pixel and

the corresponding pixel in an adjacent image (i.e., interframe coding versus Thompson's intraframe coding).

However, Girod discloses a similar system (Fig. 1) including interframe coding (Fig. 2a). Furthermore, Cohen discloses implementing a similar system (Sec. II.A.) on a computer (Sec. II.C.) which inherently includes a processor and memory.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image decompression system of Thompson by replacing the intraframe sampling with the interframe sampling of Girod, motivated by the fact that this system will prove beneficial "[i]n regions of the picture where the signal contains only small changes from frame to frame" (Girod p. 332 col. 2, fifth full paragraph), and implementing the technique on a computer such as that disclosed by Cohen, motivated by the well-known usefulness of implementing computationally-intensive techniques on a computer.

Conclusion

24.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cutler, C., U.S. Patent 2,605,361.

Mounts, F.W., U.S. Patent 3,571,505.

Iinuma, K., U.S. Patent 4,133,006.

Iinuma, K., U.S. Patent 4,142,205.

Ishiguro et al., U.S. Patent 4,179,710.

Powell, P.G., U.S. Patent 4,446,484.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Barry Drennan whose telephone number is 571-270-

7262. The examiner can normally be reached on Monday through Thursday and

alternate Fridays from 8:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Abul Azad can be reached on 571-272-7599. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ABUL AZAD/
Supervisory Patent Examiner, Art
Unit 4133

/Barry Drennan/
Examiner, Art Unit 4133